Indiana Department of Education
Academic Standards Course Framework

AUTOMOTIVE COLLISION REPAIR TECHNOLOGY I

Automotive Collision Repair Technology I includes classroom and laboratory experiences concerned with all phases of the repair of damaged vehicle bodies and frames, including metal straightening; smoothing areas by filing, grinding, or sanding; concealment of imperfections; painting; and replacement of body components including trim. Students examine the characteristics of body metals including the installation of moldings, ornaments, and fasteners with an emphasis on sheet metal analysis and safety. Course coverage also includes instruction in personal and environmental safety practices as related to OSHA and other agencies that affect individuals working in the ground transportation technology areas. Additional instruction is given on measurement principles and automotive fasteners. Instruction should also emphasize computerized frame diagnosis, computerized color-mixing, and computerized estimating of repair costs. Additional academic skills taught in this course include precision measurement and mathematical calibrations as well as scientific principles related to adhesive compounds, color-mixing, abrasive materials, metallurgy, and composite materials**.**

- DOE Code: 5514
- Recommended Grade Level: Grade 11-12
- Recommended Prerequisites: Introduction to Transportation
- Credits: 2-3 credits per semester, maximum of 6 credits
- Counts as a Directed Elective or Elective for the General, Core 40, Core 40 with Academic Honors and Core 40 with Technical Honors diplomas
- This course is aligned with postsecondary courses for Dual Credit:
    - Ivy Tech
        - AUBR 101- Body Repair Fundamentals
    - Vincennes University
        - AUTO 105- Transportation Fundamentals
        - BODY 100/L-Body Repair I, Body Repair Lab

Dual Credit

This course provides the opportunity for dual credit for students who meet postsecondary requirements for earning dual credit and successfully complete the dual credit requirements of this course.

Application of Content and Multiple Hour Offerings

Intensive laboratory applications are a component of this course and may be either school based or work based or a combination of the two. Work-based learning experiences should be in a closely related industry setting. Instructors shall have a standards-based training plan for students participating in work-based learning experiences. When a course is offered for multiple hours per semester, the amount of laboratory application or work-based learning needs to be increased proportionally.

Career and Technical Student Organizations (CTSOs)

Career and Technical Student Organizations are considered a powerful instructional tool when integrated into Career and Technical Education programs. They enhance the knowledge and skills students learn in a course by allowing a student to participate in a unique program of career and leadership development. Students should be encouraged to participate in SkillsUSA, the CTSO for this area.

Content Standards

Domain – Personal/Soft Skills

Core Standard 1 Students apply and adapt appropriate workplace behaviors needed for career success to prepare for further education and training programs.

Standards

ACRTI-1.1	Identify the appropriate resources for task completion
ACRTI-1.2	Use effective interpersonal skills to complete group assignments
ACRTI-1.3	Demonstrate leadership skills
ACRTI-1.4	Evaluate data for work assignments
ACRTI-1.5	Apply concepts for effective critical thinking, decision making, and problem-solving techniques
ACRTI-1.6	Choose appropriate tools and technology for task completion
ACRTI-1.7	Integrate quality assurance measures and safeguards
ACRTI-1.8	Incorporate effective listening and speaking skills
ACRTI-1.9	Perform mathematical calculations correctly
ACRTI-1.10	Establish a responsible work ethic
ACRTI-1.11	Establish accepted standards for ethical behavior
ACRTI-1.12	Develop a personal career goal and develop objectives for achieving the goal
ACRTI-1.13	Formulate employment and career pathway opportunities related to established career interest(s)
ACRTI-1.14	Develop a continuing education plan that identifies further education and training options
ACRTI-1.15	Complete exams leading to certifications recognized by business and industry
ACRTI-1.16	Develop skills needed to enter the workforce
ACRTI-1.17	Identify resources that keep workers current in the career field
ACRTI-1.18	Develop skills and attitudes needed for lifelong learning
ACRTI-1.19	Devise effective money management strategies

Domain – Safety/Shop Basics

Core Standard 2 Students integrate safety and basic shop procedures into activities as appropriate to comply with professional and governmental safety standards.

Standards

ACRTI-2.1	Perform personal and shop safety practices
ACRTI-2.2	Categorize various types of fasteners and their grades
ACRTI-2.3	Integrate concepts to both standard and metric measurements with various types of measuring devices. The students will use rulers, calipers, dial indicators, and micrometers
ACRTI-2.4	Use proper shop safety practices while in the lab(s)—this includes wearing safety glasses (goggles) at all times while in the lab(s)
ACRTI-2.5	Identify various fasteners and their uses—this includes all of the various fasteners used on the automobile to attach a variety of body panels and pieces to the body and/or frame of the vehicle
ACRTI-2.6	Identify various hand and power tools and demonstrate their safe and proper use,

storage, and maintenance—this also includes proper storing and oiling of air tools

Domain – Metal Repair/Plastic Repair/Welding

Core Standard 3 Students select appropriate procedures to repair damage to specific materials.

Standards

ACRTI-3.1 Perform minor damage repair and surface painting preparation procedures

ACRTI-3.2 Use welding and cutting operations as appropriate

ACRTI-3.3 Perform outer body panel repairs per industry standards

ACRTI-3.4 Define and describe different types of metals—this includes the identification of the various types of metals used on automobiles

ACRTI-3.5 Gauge metals—this includes the proper use of specific measuring tools used to gauge metals

Domain – Glass/Trim/Interior

Core Standard 4 Students select appropriate procedures to repair damage to glass, trim, and vehicle interior.

Standards

ACRTI-4.1 Demonstrate proper procedures for removing and replacing glass

ACRTI-4.2 Demonstrate the proper removal, installation, inspection, and replacement (if necessary) procedures of moldings and ornaments

ACRTI-4.3 Identify repair processes for plastic and adhesives

Domain – Estimating

Core Standard 5 Students analyze vehicle structural damage to estimate repair costs in terms of man hours and materials needed.

Standards

ACRTI-5.1 Calculate repair costs for various interior, exterior, mechanical, and electrical components to prepare accurate estimates to customers

Domain – Frame/Structural/Welding

Core Standard 6 Students select appropriate procedures to repair vehicle frame and structural damage.

Standards

ACRTI-6.1 Identify vehicle structural damage

ACRTI-6.2 Perform welding and cutting operations as appropriate

ACRTI-6.3 Diagnose and repair vehicle damage and perform structural analysis

ACRTI-6.4 Perform unibody diagnosis, inspection, measurement, and repairs

ACRTI-6.5 Use safe working procedures during each stage of diagnosis and repair

Process Standards

Common Core Literacy Standards for Technical Subjects

Reading Standards for Literacy in Technical Subjects 11-12

The standards below begin at grade 11 and define what students should understand and be able to do by the end of grade 12. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations – the former providing broad standards, the latter providing additional specificity.

Key Ideas and Details

11-12.RT.1 Cite specific textual evidence to support analysis of technical texts, attending to important distinctions the author makes and to any gaps or inconsistencies in the account.

11-12.RT.2 Determine the central ideas or conclusions of a text; summarize complex concepts, processes, or information presented in a text by paraphrasing them in simpler but still accurate terms.

11-12.RT.3 Follow precisely a complex multistep procedure when performing technical tasks; analyze the specific results based on explanations in the text.

Craft and Structure

11-12.RT.4 Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific context relevant to *grades 11-12 texts and topics*.

11-12.RT.5 Analyze how the text structures information or ideas into categories or hierarchies, demonstrating understanding of the information or ideas.

11-12.RT.6 Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text, identifying important issues that remain unresolved.

Integration of Knowledge and Idea

11-12.RT.7 Integrate and evaluate multiple sources of information presented in diverse formats and media (e.g., quantitative data, video, multimedia) in order to address a question or solve a problem.

11-12.RT.8 Evaluate the hypotheses, data, analysis, and conclusions in a technical subject, verifying the data when possible and corroborating or challenging conclusions with other sources of information.

11-12.RT.9 Synthesize information from a range of sources (e.g., texts, experiments, simulations) into a coherent understanding of a process, phenomenon, or concept, resolving conflicting information when possible.

Range of Reading and Level of Text Complexity

11-12.RT.10 By the end of grade 12, read and comprehend technical texts in the grades 11-CCR text complexity band independently and proficiently.

Writing Standards for Literacy in Technical Subjects 11-12

The standards below begin at grade 11 and define what students should understand and be able to do by the end of grade 12. The CCR anchor standards and high school standards in literacy work in tandem to define college and career readiness expectations – the former providing broad standards, the latter providing additional specificity.

Text Types and Purposes

11-12.WT.1 Write arguments focused on *discipline-specific content*.

11-12.WT.2 Write informative/explanatory texts, including technical processes.

11-12.WT.3 Students will not write narratives in technical subjects. *Note: Students' narrative skills continue to grow in these grades. The Standards require that students be able to incorporate narrative elements effectively into arguments and informative/explanatory texts. In technical, students must be able to write precise enough descriptions of the step-by-step procedures they use in their technical work that others can replicate them and (possibly) reach the same results.*

Production and Distribution of Writing

11-12.WT.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

11-12.WT.5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.

11-12.WT.6 Use technology, including the Internet, to produce, publish, and update individual or shared writing products in response to ongoing feedback, including new arguments or information.

Research to Build and Present Knowledge

11-12.WT.7 Conduct short as well as more sustained research projects to answer a question (including a self-generated question) or solve a problem; narrow or broaden the inquiry when appropriate; synthesize multiple sources on the subject, demonstrating understanding of the subject under investigation.

11-12.WT.8 Gather relevant information from multiple authoritative print and digital sources, using advanced searches effectively; assess the usefulness of each source in answering the research question; integrate information into the text selectivity to maintain the flow of ideas, avoiding plagiarism and following a standard format for citation

11-12.WT.9 Draw evidence from informational texts to support analysis, reflection, and research.

Range of Writing

11-12.WT.10 Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.